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Taxonomic Paper

New records of chalcidid (Hymenoptera: Chalcididae) pupal parasitoids from India

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Abstract

Background

Chalcidids are one of the most important parasitoids of pupae of agriculturally important pests belonging to orders like Lepidoptera, Diptera, Coleoptera and Hymenoptera. Such an important group has not been studied consistently by any team of workers from any country apart from the notable contributions by Boucek, Steffan, Delvare and Narendran. (Boucek 1988, Steffan 1973, Delvare 1992 and Narendran 1989). On a personal note, Dr. John S Noyes of Natural History Museum London agrees with this view as expressed with the second author and hence we felt that we can initiate further work on this group within India. We currently hold hundreds of unidentified specimens of this family in our department collection confirming that we will have much work to do over a long period of time.

New information

New distribution records of Chalcididae from Andhra Pradesh (*Brachymeria megaspila*, *B. minuta*, *Dirhinus anthracia* and *D. auratus*), Bihar (*B. podagrica*, *B. excarinata*, *B. hearseyi*,

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D. anthracia, *D. auratus*, *D. pilifer*, *Epitranus erythrogaster* and *Psilochalcis carinigena*), Karnataka (*B. apicicornis*), Manipur (*B. euploeae*, *D. auratus* and *E. erythrogaster*), Mizoram (*B. euploeae* and *D. anthracia*), Nagaland (*B. euploeae*), Himachal Pradesh (*B. alternipes*), and Tamil Nadu (*B. apicicornis*, *D. anthracia*, *D. deplanatus*, *D. pilifer*, *D. bakeri, E. observator*, *E. elongatulus*, *P. keralensis* and *P. soudanensis*) and union territories Andaman & Nicobar Islands (*B. podagrica*, *B. excarinata*, *E. erythrogaster* and *P. carinigena*) and Pudhucherry (*B. albicrus*, *D. anthracia*, *D. auratus*, *E. erythrogaster* and *P. kerelensis*) are documented from the unidentified material mentioned above.

Keywords

Insecta, Chalcidoidea, Distributional records, India

Introduction

Members of the family Chalcididae are predominantly primary endoparasitoids of Lepidoptera and Diptera, though a few species attack Hymenoptera, Coleoptera and Neuroptera (Gibson 1996). Though there are about 90 genera and 1530 species globally, only 29 genera and 214 species are reported from India (Noyes 2015) indicating that the Indian fauna is poorly known. In India, Mani 1989, Mani and Kurian 1953, Mani and Dubey 1972, Mani et al. 1973, and Mani et al. 1974 previously worked on this group. Other few notable contributions are by Joseph et al. 1973 (described 21 new species, 7 new sub species and made revisions of 43 known species of Oriental *Brachymeria*) and Narendran 1989 (described 4 new genera, 88 new species and made revisions of 37 known genera and 242 known species). Since then, work on Indian Chalcididae dwindled. In this paper, we document new records of Chalcididae from different states and union territories of India as outlined above.

Materials and methods

Parasitoids were collected from Indian states Andhra Pradesh, Bihar, Karnataka, Himachal Pradesh, Manipur, Mizoram, Nagaland, and Tamil Nadu and union territories, Andaman & Nicobar Islands and Pudhucherry using yellow pan traps in different ecosystems. Specimens were dried using hexamethyldisilazane as described by Brown (1993) and card mounted using the standard procedure adopted by Noyes (1982). Specimens identified were deposited in the Parasitoid Taxonomy and Biocontrol laboratory, Department of Entomology, Annamalai University (EDAU).

Taxon treatments

Brachymeria albicrus (Klug) 1834

Material

a. continent: Asia; country: India; countryCode: IND; stateProvince: Pudhucherry; samplingProtocol: Yellow pan trap; eventDate: 03/13/2011; individualCount: 1; lifeStage: adult; recordedBy: S. Manickavasagam; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

Distribution

This species is so far known from Odisha and Tamil Nadu (Noyes 2015) and is a new record for Pudhucherry (Fig. 1).

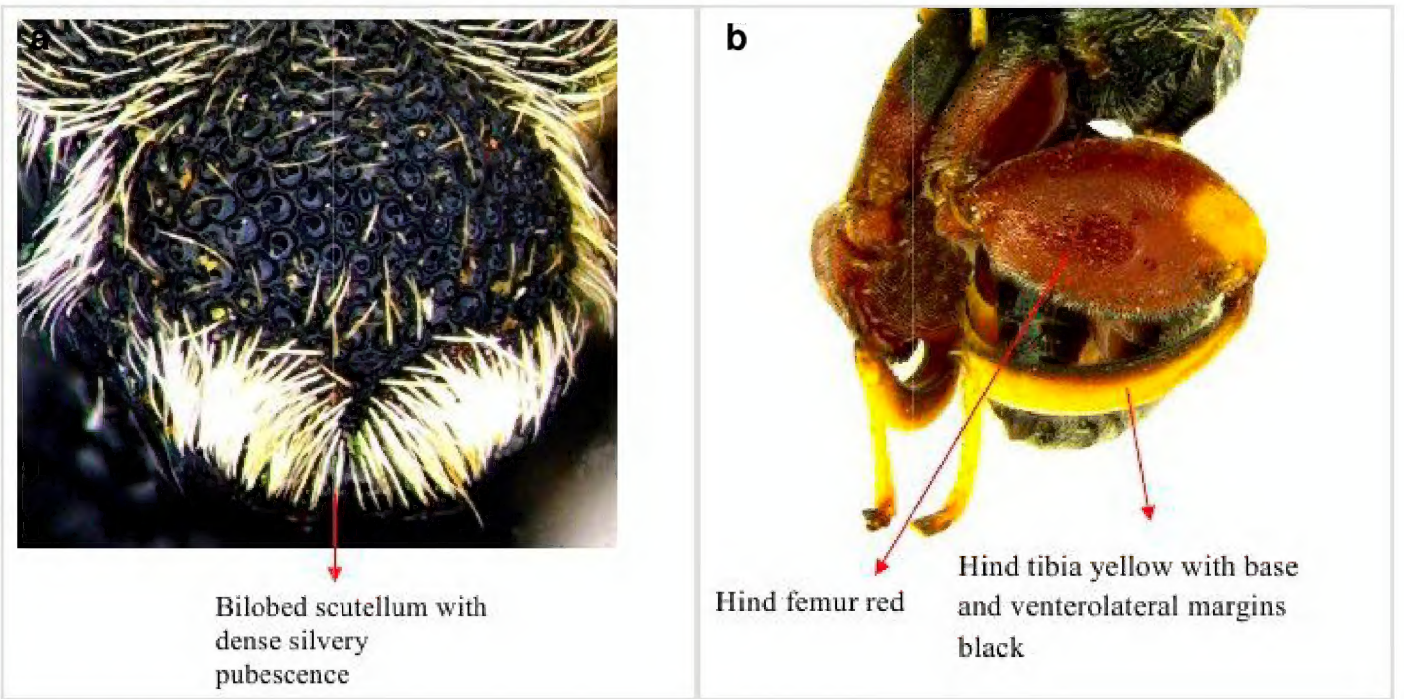
a
Bilobed scutellum with dense silvery pubescence
b
Hind femur red
Hind tibia yellow with base and venterolateral margins black

Figure 1.

Brachymeria albicrus (Klug)

a: Scutellum dorsal view
b: Hind leg

Brachymeria alternipes (Walker) 1871

Material

a. continent: Asia; country: India; countryCode: IND; stateProvince: Himachal Pradesh; samplingProtocol: Yellow pan trap; eventDate: 09/23/1981; individualCount: 12; lifeStage: adult; recordedBy: Not known; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

Distribution

B. alternipes is so far known from Arunachal Pradesh (Sheela et al. 2003), Tamil Nadu and Manipur (Narendran 1989) and is a new record for Himachal Pradesh (Fig. 2).

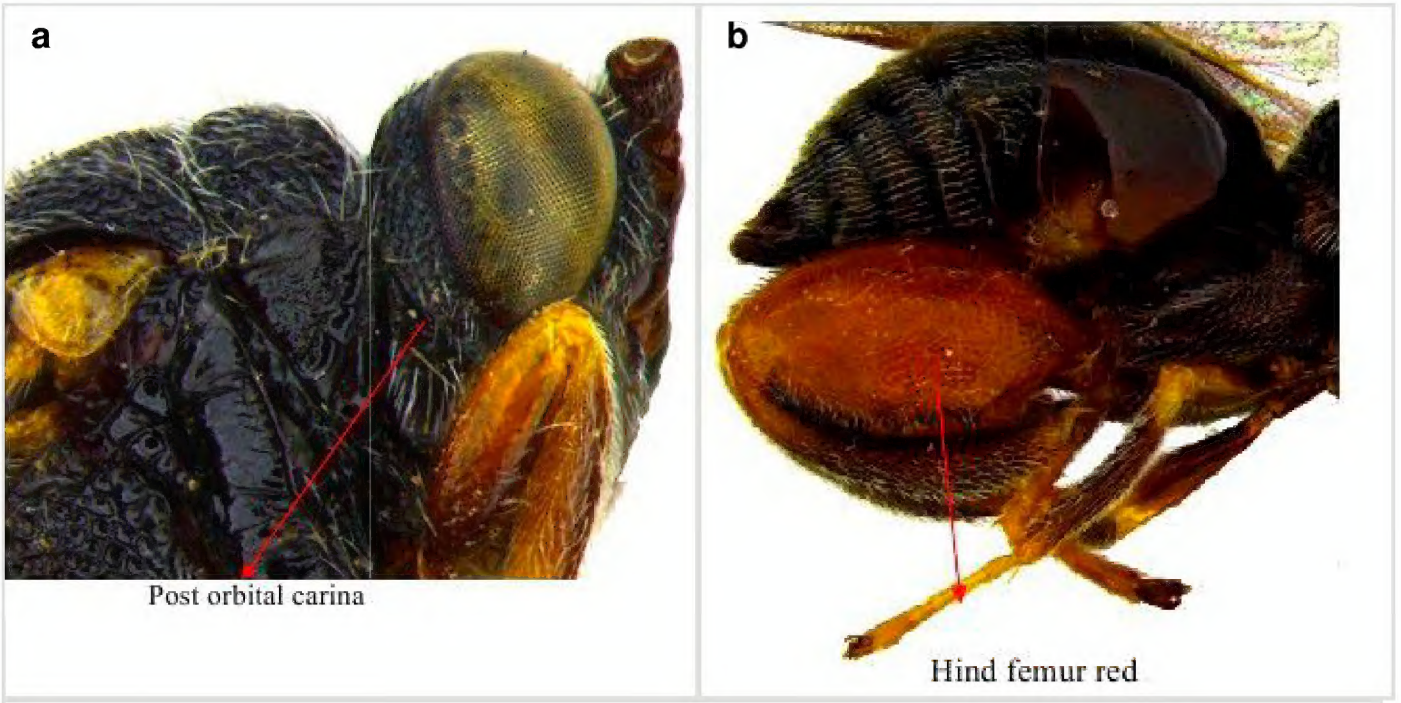

Figure 2.

Brachymeria alternipes (Walker)

a: Head & part of mesosoma lateral view
b: Gaster & hind leg

Brachymeria apicicornis (Cameron) 1911

Materials

a. continent: Asia; country: India; countryCode: IND; stateProvince: Tamil Nadu; samplingProtocol: Yellow pan trap; eventDate: 08/12/2009; individualCount: 13; lifeStage: adult; recordedBy: N. Gowthaman; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

b. continent: Asia; country: India; countryCode: IND; stateProvince: Karnataka; samplingProtocol: Yellow pan trap; eventDate: 09/24/2014; individualCount: 17; lifeStage: adult; recordedBy: S. Sowmiya; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

c. continent: Asia; country: India; countryCode: IND; stateProvince: Pudhucherry; samplingProtocol: Yellow pan trap; eventDate: 03/13/2011; individualCount: 1; lifeStage: adult; recordedBy: S. Manickavasagam; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

Distribution

B. apicicornis is so far known from Kerala (Narendran 1989) and is a new record for Tamil Nadu and Karnataka (Fig. 3).

Figure 3.

Brachymeria apicicornis (Cameron)

a: Gaster dorso lateral
b: Hind leg

Brachymeria euploeae (Westwood) 1837

Materials

a. continent: Asia; country: India; countryCode: IND; stateProvince: Manipur; samplingProtocol: Yellow pan trap; eventDate: 02/18/2014; individualCount: 20; lifeStage: adult; recordedBy: Sophis Singh; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

b. continent: Asia; country: India; countryCode: IND; stateProvince: Mizoram; samplingProtocol: Yellow pan trap; eventDate: 12/30/2014; individualCount: 5; lifeStage: adult; recordedBy: Sophis Singh; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

c. continent: Asia; country: India; countryCode: IND; stateProvince: Nagaland; samplingProtocol: Yellow pan trap; eventDate: 12/20/2014; individualCount: 2; lifeStage: adult; recordedBy: Sophis Singh; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

Distribution

This species so far known from Andaman and Nicobar island, Tripura, (Sheela et al. 2003) Arunachal Pradesh, Bihar, Haryana, Jharkhand, Karnataka, Madhya Pradesh, Manipur, Odisha, Punjab, Tamil Nadu, Uttar Pradesh, Uttarkhand and West Bengal (Narendran 1989) and is a new record for Manipur, Mizoram and Nagaland (Fig. 4).

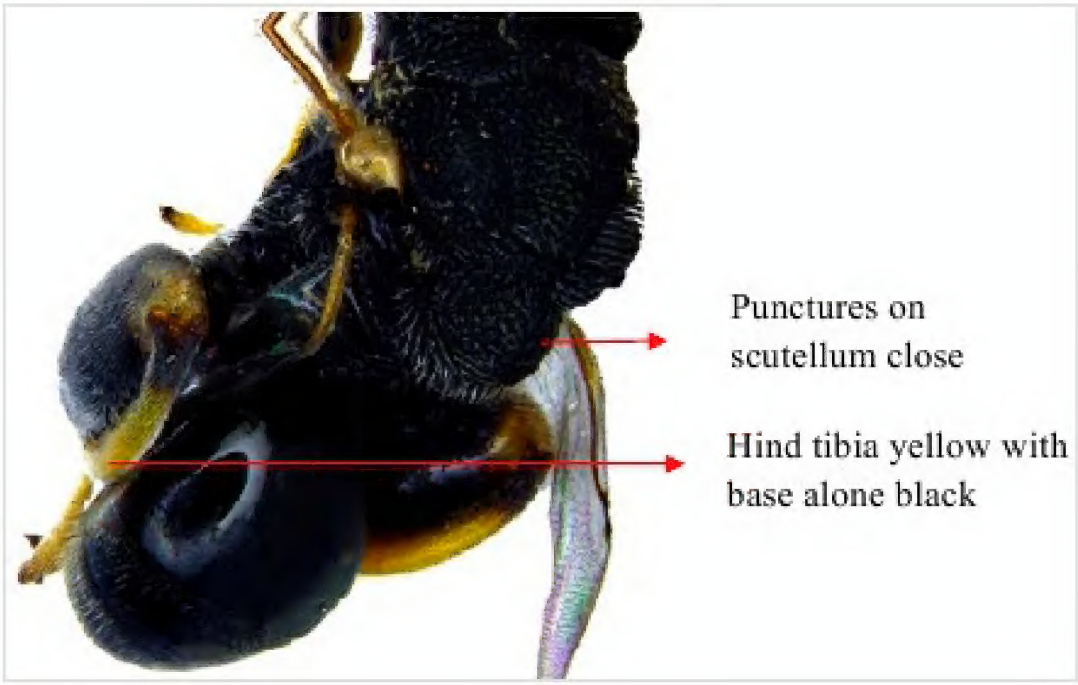

Figure 4.

Brachymeria euploeae (Westwood)

Brachymeria excarinata Gahan 1925

Materials

a. continent: Asia; country: India; countryCode: IND; stateProvince: Bihar; samplingProtocol: Yellow pan trap; eventDate: 01/27/2015; individualCount: 1; lifeStage: adult; recordedBy: Abhinav Kumar; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

b. continent: Asia; country: India; countryCode: IND; stateProvince: Andaman and Nicobar islands; samplingProtocol: Yellow pan trap; eventDate: 05/21/2012; individualCount: 2; lifeStage: adult; recordedBy: S. Manickavasagam and A. Ramesh Kumar; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

Distribution

B. excarinata is so far known from Gujarat, Karnataka, Kerala and Tamil Nadu (Joseph et al. 1973) and is a new record for Bihar and Andaman and Nicobar islands (Fig. 5).

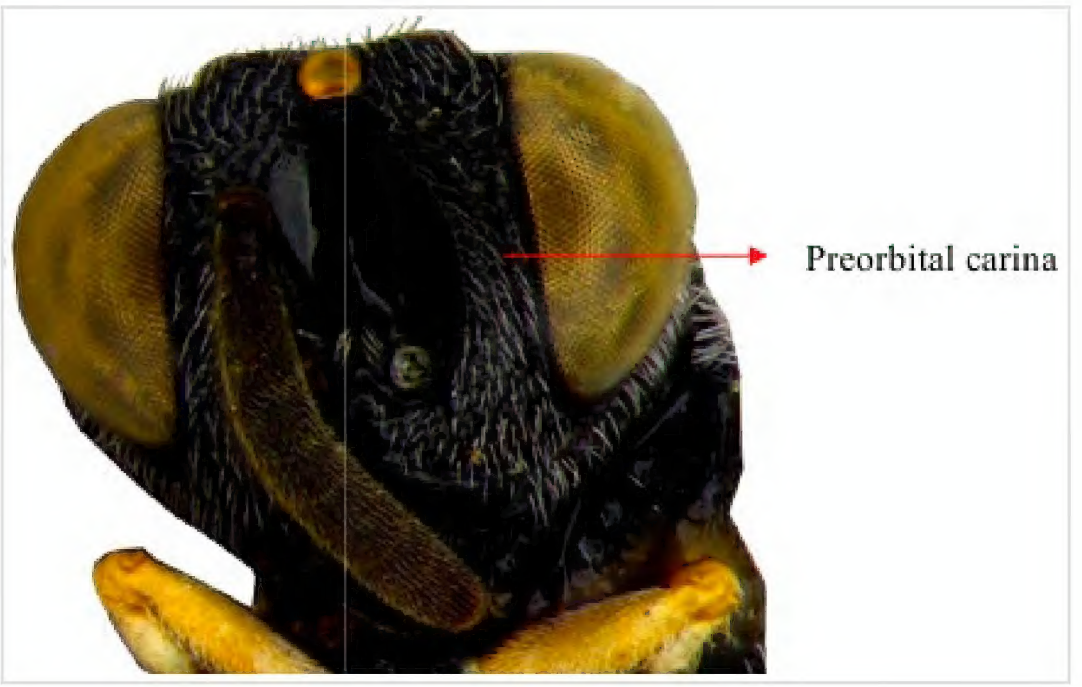

Figure 5.

Brachymeria excarinata Gahan

Brachymeria hearseyi (Kirby) 1883

Materials

a. continent: Asia; country: India; countryCode: IND; stateProvince: Bihar; samplingProtocol: Yellow pan trap; eventDate: 07/08/2014; individualCount: 1; lifeStage: adult; recordedBy: Abhinav Kumar; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

b. continent: Asia; country: India; countryCode: IND; stateProvince: Manipur; samplingProtocol: Yellow pan trap; eventDate: 02/18/2014; individualCount: 20; lifeStage: adult; recordedBy: Sophis Singh; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

c. continent: Asia; country: India; countryCode: IND; stateProvince: Mizoram; samplingProtocol: Yellow pan trap; eventDate: 12/13/2014; individualCount: 5; lifeStage: adult; recordedBy: Sophis Singh; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

d. continent: Asia; country: India; countryCode: IND; stateProvince: Nagaland; samplingProtocol: Yellow pan trap; eventDate: 12/22/2014; individualCount: 4; lifeStage: adult; recordedBy: Sophis Singh; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

Distribution

B. hearseyi is so far known from Andaman and Nicobar Islands (Sheela et al. 2003) and West Bengal (Joseph et al. 1973) and is a new record for Bihar (Fig. 6).

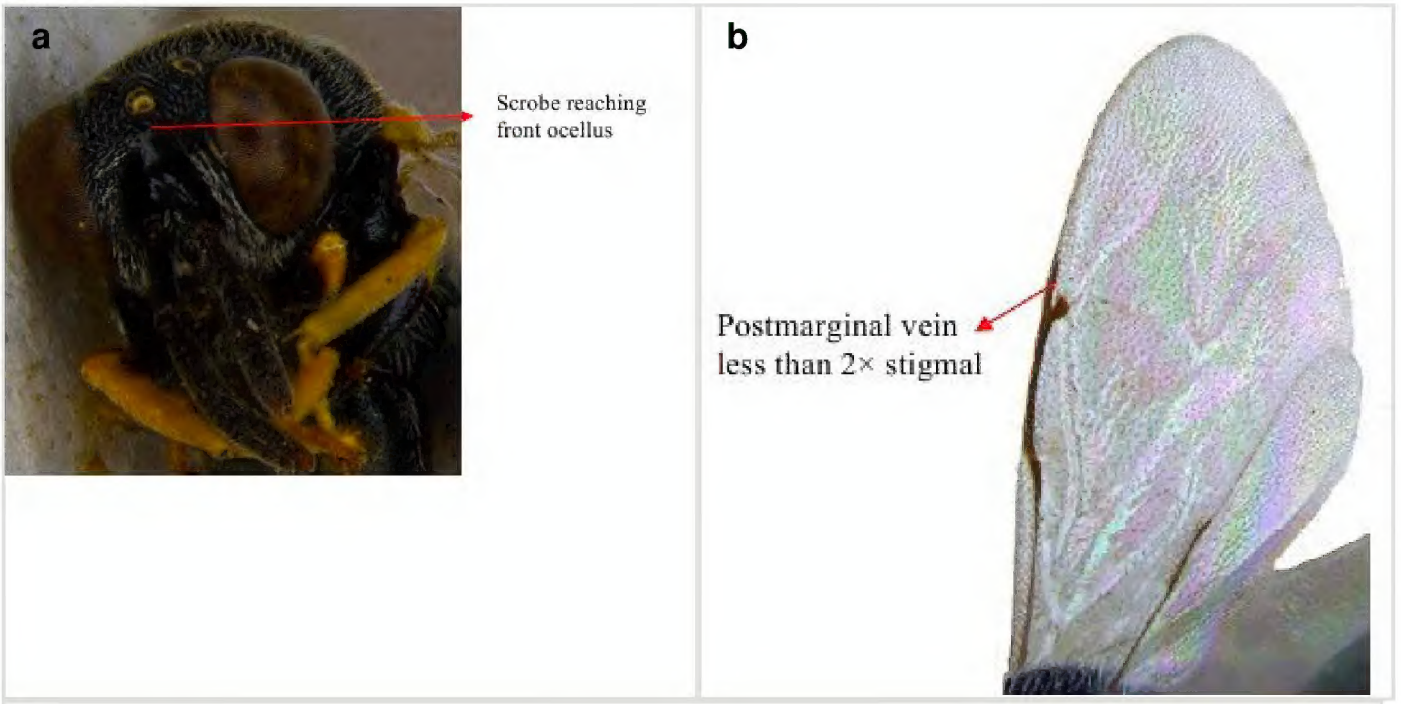

Figure 6.

Brachymeria hearseyi (Kirby)

a: Head frontal showing scrobe

b: Fore wing

Brachymeria megaspila (Cameron) 1907

Material

a. continent: Asia; country: India; countryCode: IND; stateProvince: Andhra Pradesh; samplingProtocol: Yellow pan trap; eventDate: 03/20/2010; individualCount: 1; lifeStage: adult; recordedBy: T. Krishna Chaitanya; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

Distribution

B. megaspila is so far known from Assam, Kerala and Madhya Pradesh (Narendran 1989) and is a new record for Andhra Pradesh (Fig. 7).

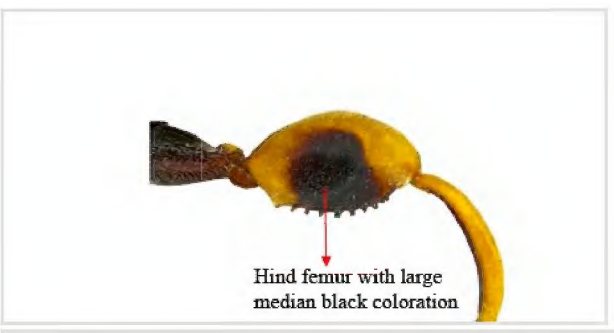

Figure 7.

Brachymeria megaspila (Cameron)

Brachymeria minuta (Linnaeus) 1767

Material

a. continent: Asia; country: India; countryCode: IND; stateProvince: Andhra Pradesh; samplingProtocol: Yellow pan trap; eventDate: 03/20/2010; individualCount: 2; lifeStage: adult; recordedBy: T. Krishna Chaitanya; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

Distribution

This species is so far known from Karnataka, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal (Narendran 1989) and is a new record for Andhra Pradesh (Fig. 8).

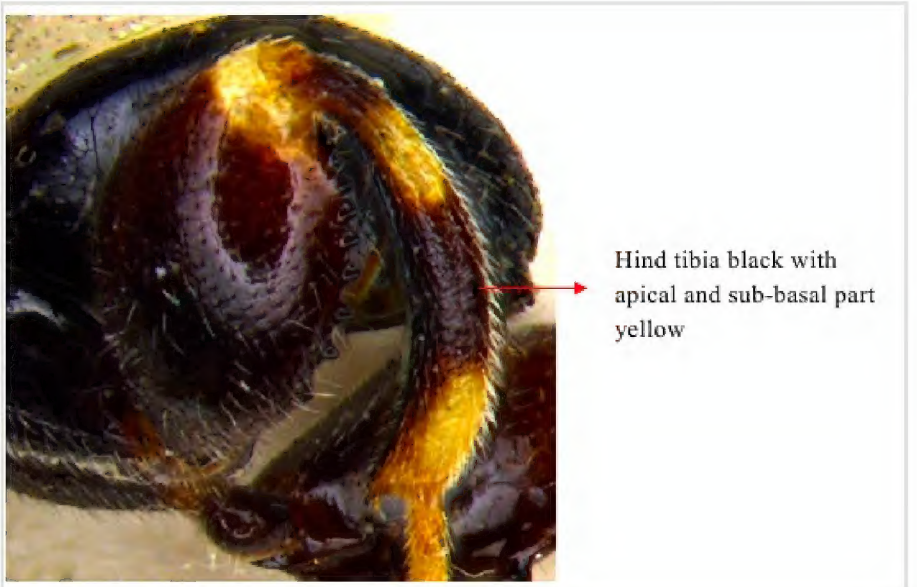

Figure 8.

Brachymeria minuta (Linnaeus)

Brachymeria podagrica (Fabricius) 1787

Materials

a. continent: Asia; country: India; countryCode: IND; stateProvince: Bihar; samplingProtocol: Yellow pan trap; eventDate: 01/27/2015; individualCount: 2; lifeStage: adult; recordedBy: Abhinav Kumar; identifiedBy: J. Gowri Prakash, S. Manickavasagam and R.Kanagarajan; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

b. continent: Asia; country: India; countryCode: IND; stateProvince: Andaman and Nicobar islands; samplingProtocol: Yellow pan trap; eventDate: 05/21/2012; individualCount: 3; lifeStage: adult; recordedBy: S. Manickavasagam and A. Ramesh kumar; identifiedBy: J. Gowri Prakash, S. Manickavasagam and R.Kanagarajan; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

Distribution

B. podagrica is so far known from Madhya Pradesh, Sikkim, Tamil Nadu and Tripura (Joseph et al. 1973) and is a new record for Bihar and Andaman and Nicobar islands (Fig. 9).

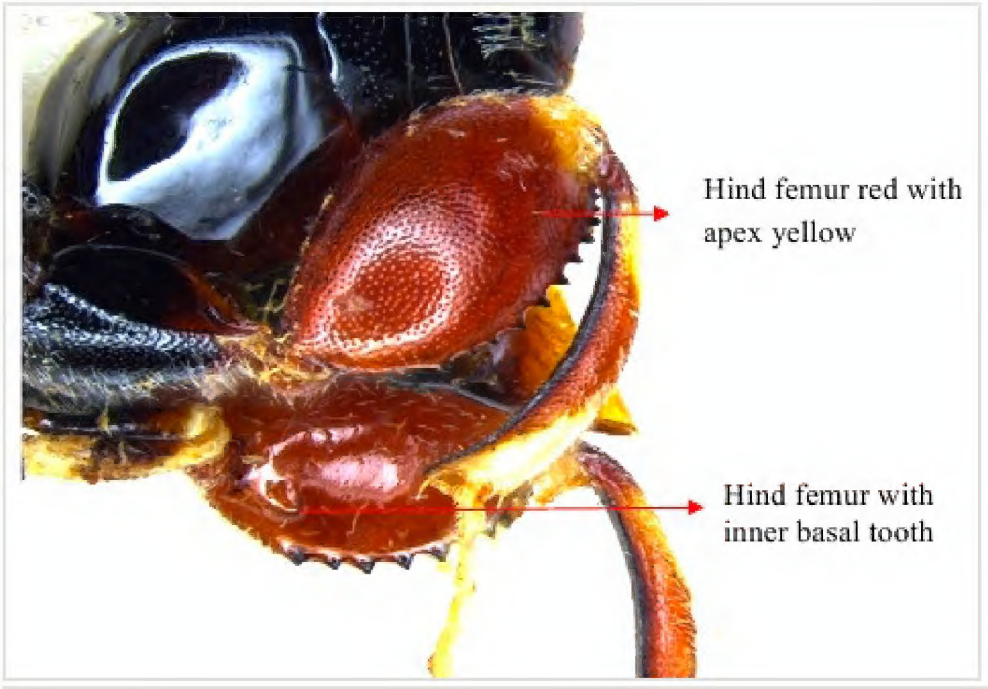

Figure 9.

Brachymeria podagrica (Fabricius)

Dirhinus anthracia Walker 1846

Materials

a. continent: Asia; country: India; countryCode: IND; stateProvince: Tamil Nadu; samplingProtocol: Yellow pan trap; eventDate: 2014-04-04 and 2014-07-29; individualCount: 40; lifeStage: adult; recordedBy: J. Gowri Prakash; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

b. continent: Asia; country: India; countryCode: IND; stateProvince: Pudhucherry; samplingProtocol: Yellow pan trap; eventDate: 03/13/2011; individualCount: 1; lifeStage: adult; recordedBy: S. Manickavasagam; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

c. continent: Asia; country: India; countryCode: IND; stateProvince: Andhra Pradesh; samplingProtocol: Yellow pan trap; eventDate: 01/06/2011; individualCount: 1; lifeStage: adult; recordedBy: T. Krishna Chaitanya; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

d. continent: Asia; country: India; countryCode: IND; stateProvince: Bihar; samplingProtocol: Yellow pan trap; eventDate: 02/22/2014; individualCount: 6; lifeStage: adult; recordedBy: Abhinav Kumar; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

e. continent: Asia; country: India; countryCode: IND; stateProvince: Mizoram; samplingProtocol: Yellow pan trap; eventDate: 12/30/2014; individualCount: 1; lifeStage:

adult; recordedBy: Sophis singh; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

Distribution

D. anthracia is so far known from Madhya Pradesh, Manipur, Punjab, Tripura and Uttar Pradesh (Narendran 1989) and is a new record for Tamil Nadu, Pudhucherry, Andhra Pradesh, Bihar and Mizoram (Fig. 10).

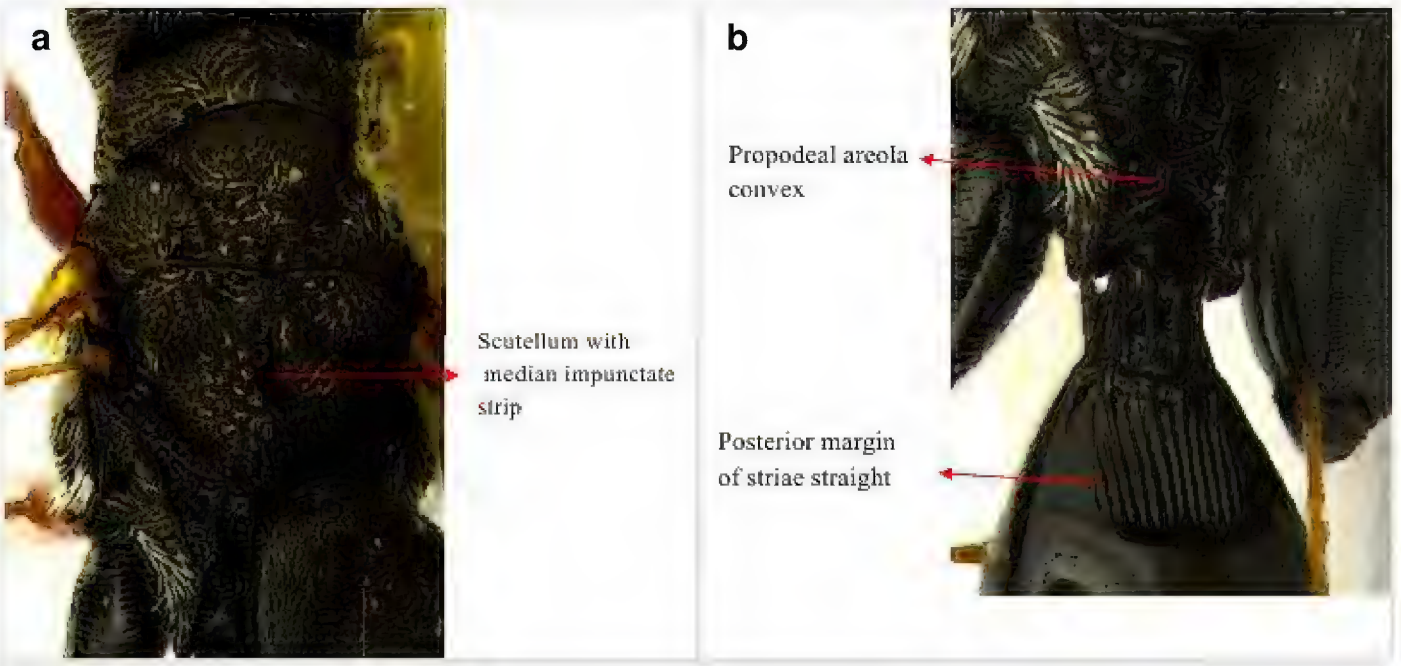

Figure 10.

Dirhinus anthracia Walker

a: Part of mesosoma dorsal
b: Propodeum, petiole and gastral segment 1

Dirhinus auratus Ashmead 1905

Materials

a. continent: Asia; country: India; countryCode: IND; stateProvince: Pudhucherry; samplingProtocol: Yellow pan trap; eventDate: 03/13/2011; individualCount: 3; lifeStage: adult; recordedBy: S. Manickavasagam; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

b. continent: Asia; country: India; countryCode: IND; stateProvince: Andhra Pradesh; samplingProtocol: Yellow pan trap; eventDate: 10/03/2010; individualCount: 7; lifeStage: adult; recordedBy: T. Krishna Chaitanya; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

c. continent: Asia; country: India; countryCode: IND; stateProvince: Bihar; samplingProtocol: Yellow pan trap; eventDate: 04/22/2014; individualCount: 2; lifeStage: adult; recordedBy: Abhinav Kumar; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

d. continent: Asia; country: India; countryCode: IND; stateProvince: Manipur; samplingProtocol: Yellow pan trap; eventDate: 11/29/2014; individualCount: 4; lifeStage:

adult; recordedBy: Sophis Singh; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

e. continent: Asia; country: India; countryCode: IND; stateProvince: Tamil Nadu; samplingProtocol: Yellow pan trap; eventDate: 09/21/2014; individualCount: 14; lifeStage: adult; recordedBy: N. Gowthaman and S. Palanivel; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

f. continent: Asia; country: India; countryCode: IND; stateProvince: Bihar; samplingProtocol: Yellow pan trap; eventDate: 01/07/2015; individualCount: 2; lifeStage: adult; recordedBy: Abhinav Kumar; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

Distribution

This species is so far known from Delhi, Karnataka, Kerala, Madhya Pradesh, Punjab, Tamil Nadu, Uttar Pradesh and West Bengal (Noyes 2015) and is a new record for Pudhucherry, Andhra Pradesh, Bihar and Manipur (Fig. 11).

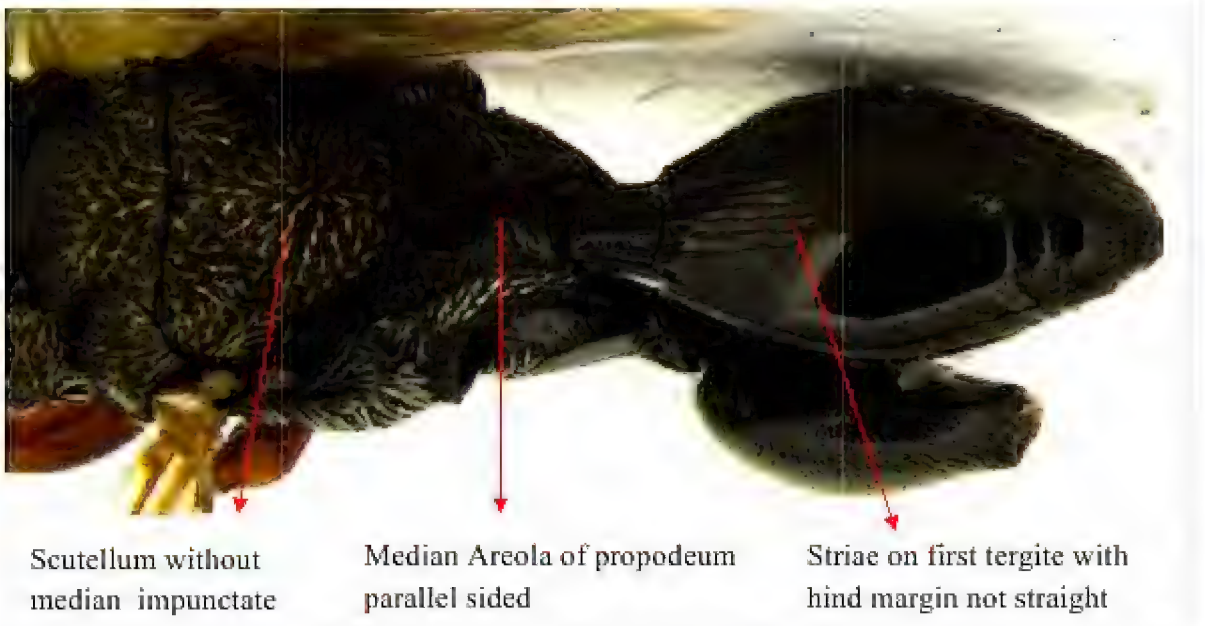
Scutellum without median impunctate
Median Areola of propodeum parallel sided
Striae on first tergite with hind margin not straight

Figure 11.

Dirhinus auratus Ashmead

Dirhinus bakeri (Crawford) 1915

Material

a. continent: Asia; country: India; countryCode: IND; stateProvince: Tamil Nadu; samplingProtocol: Yellow pan trap; eventDate: 03/02/2013; individualCount: 3; lifeStage: adult; recordedBy: S. Palanivel; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

Distribution

D. bakeri is so far known from Delhi, Karnataka, Kerala, Madhya Pradesh, Odisha, Tripura, Uttar Pradesh and West Bengal (Noyes 2015) and is a new record for Tamil Nadu (Fig. 12).

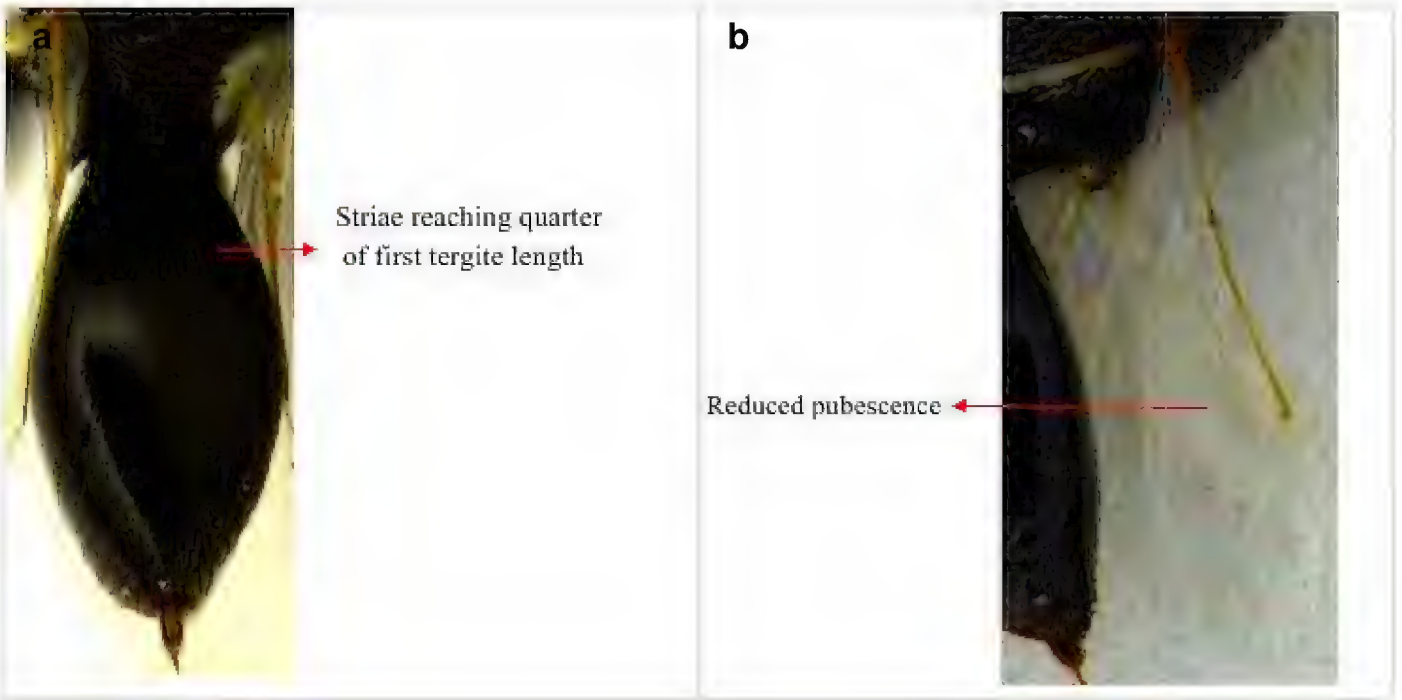

Figure 12.

Dirhinus bakeri (Crawford)

a: Mid part of soma

b: Fore wing

Dirhinus deplanatus Boucek & Narendran 1981

Material

a. continent: Asia; country: India; countryCode: IND; stateProvince: Tamil Nadu; samplingProtocol: Yellow pan trap; eventDate: 2014-02-22 and 2014-07-29; individualCount: 6; lifeStage: adult; recordedBy: M. Ayyam Perumal, S. Palanivel and R.Kanagarajan; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

Distribution

D. deplanatus is so far known from Bihar, Delhi and Odisha (Narendran 1989) and is a new record for Tamil Nadu (Fig. 13).

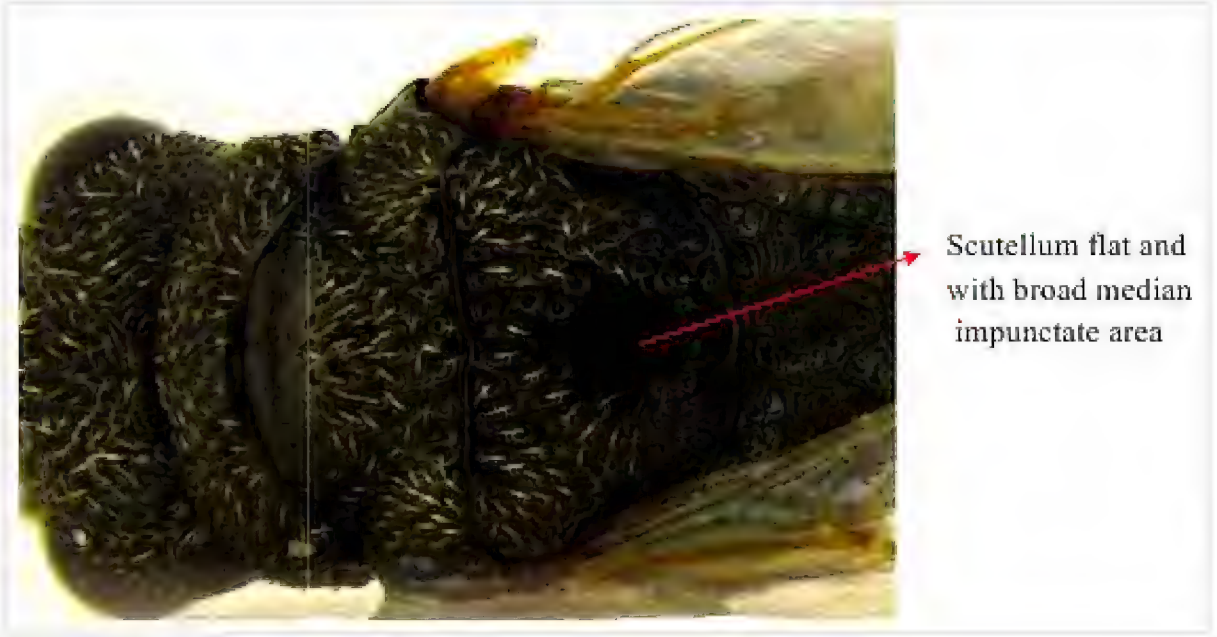

Figure 13.

Dirhinus deplanatus Boucek & Narendran

Dirhinus pilifer Boucek & Narendran 1981

Materials

a. continent: Asia; country: India; countryCode: IND; stateProvince: Tamil Nadu; samplingProtocol: Yellow pan trap; eventDate: 09/21/2014; individualCount: 14; lifeStage: adult; recordedBy: N. Gowthaman and S. Palanivel; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

b. continent: Asia; country: India; countryCode: IND; stateProvince: Bihar; samplingProtocol: Yellow pan trap; eventDate: 01/07/2015; individualCount: 2; lifeStage: adult; recordedBy: Abhinav Kumar; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

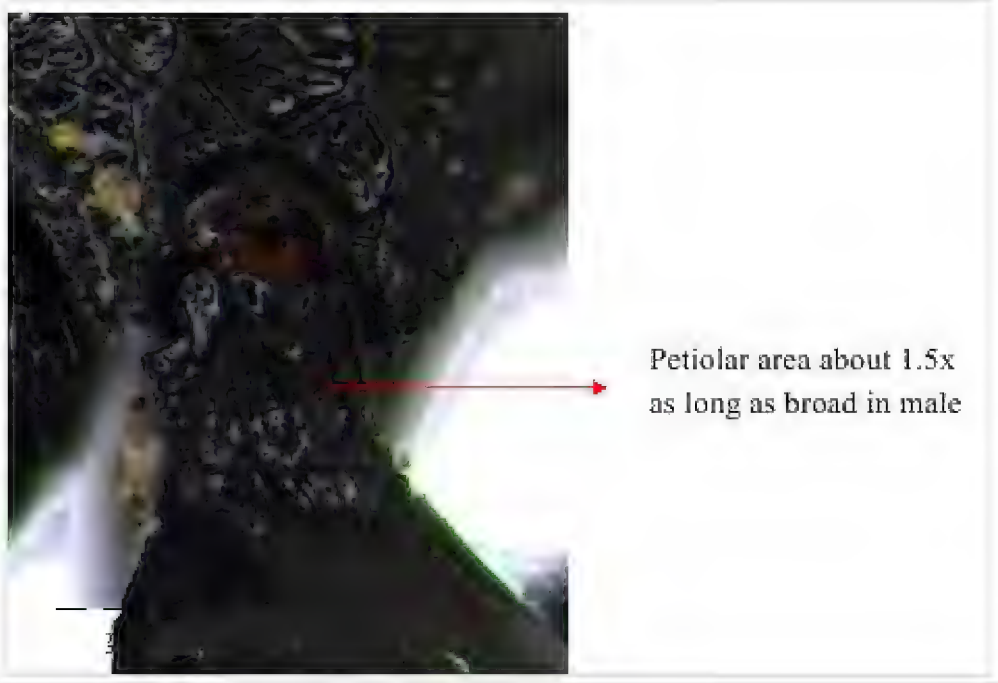

Figure 14.

Dirhinus pilifer Boucek & Narendran

Distribution

D. pilifer is so far known from Karnataka, Uttar Pradesh and West Bengal (Noyes 2015) and is a new record Tamil Nadu and Bihar (Fig. 14).

Epitranus elongatulus (Motschulsky) 1863

Material

a. continent: Asia; country: India; countryCode: IND; stateProvince: Tamil Nadu; samplingProtocol: Yellow pan trap; eventDate: 02/24/2014; individualCount: 6; lifeStage: adult; recordedBy: N. Gowthaman and M. Ayyam Perumal; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

Distribution

E. elongatulus is so far known from Delhi and Kerala (Narendran 1989) and is a new record for Tamil Nadu (Fig. 15).

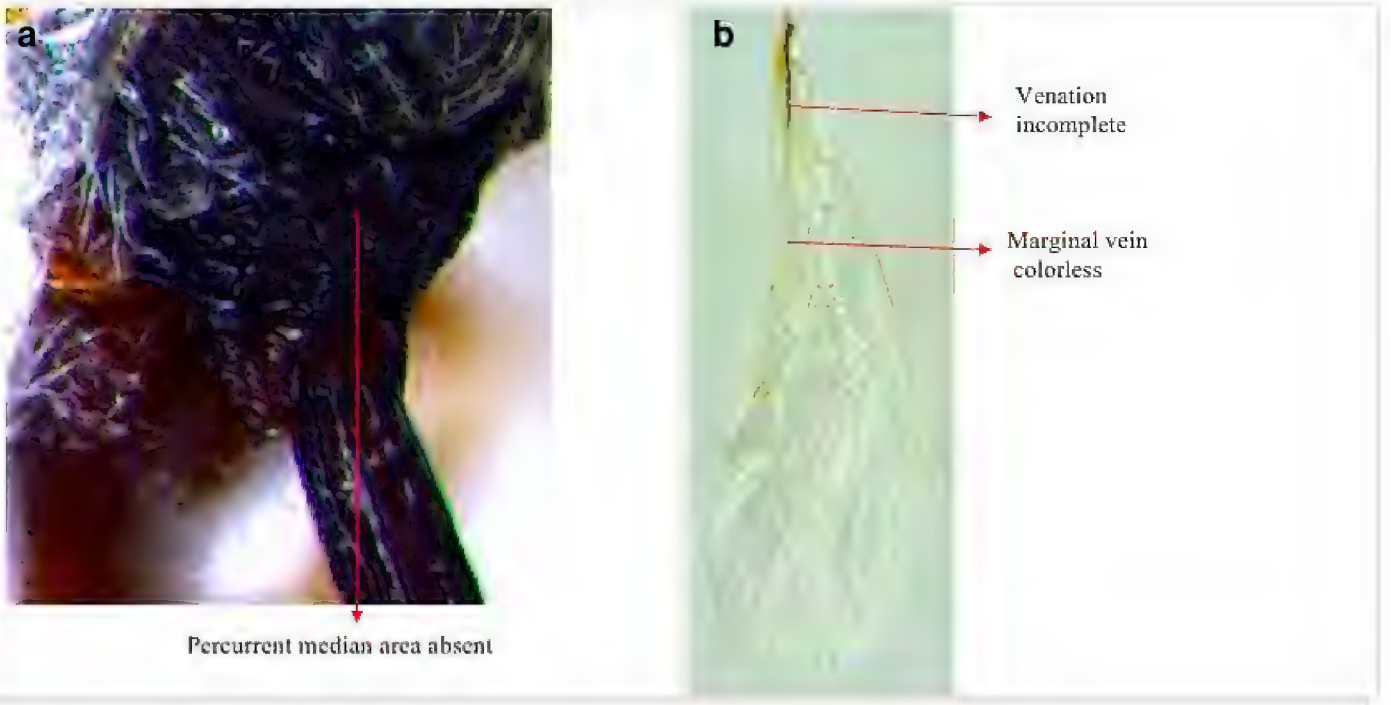

Figure 15.

Epitranus elongatulus (Motschulsky)

a: Propodeum & petiole
b: Fore wing

Epitranus erythrogaster Cameron 1888

Materials

a. continent: Asia; country: India; countryCode: IND; stateProvince: Pudhucherry; samplingProtocol: Yellow pan trap; eventDate: 03/13/2011; individualCount: 11; lifeStage: adult; recordedBy: S. Manickavasagam; identifiedBy: J. Gowri Prakash and S.

Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

b. continent: Asia; country: India; countryCode: IND; stateProvince: Bihar; samplingProtocol: Yellow pan trap; eventDate: 02/22/2014; individualCount: 10; lifeStage: adult; recordedBy: Abhinav Kumar; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

c. continent: Asia; country: India; countryCode: IND; stateProvince: Manipur; samplingProtocol: Yellow pan trap; eventDate: 02/18/2014; individualCount: 1; lifeStage: adult; recordedBy: Sophis Singh; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

d. continent: Asia; country: India; countryCode: IND; stateProvince: Andaman and Nicobar islands; samplingProtocol: Yellow pan trap; eventDate: 05/20/2012; individualCount: 2; lifeStage: adult; recordedBy: S. Manickavasagam and A. Rameshkumar; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

Distribution

This species is so far known from Karnataka, Kerala, Maharashtra, Tamil Nadu, Uttar Pradesh and West Bengal (Boucek 1982) and is a new record for Pudhucherry, Bihar, Manipur and Andaman and Nicobar islands (Fig. 16).

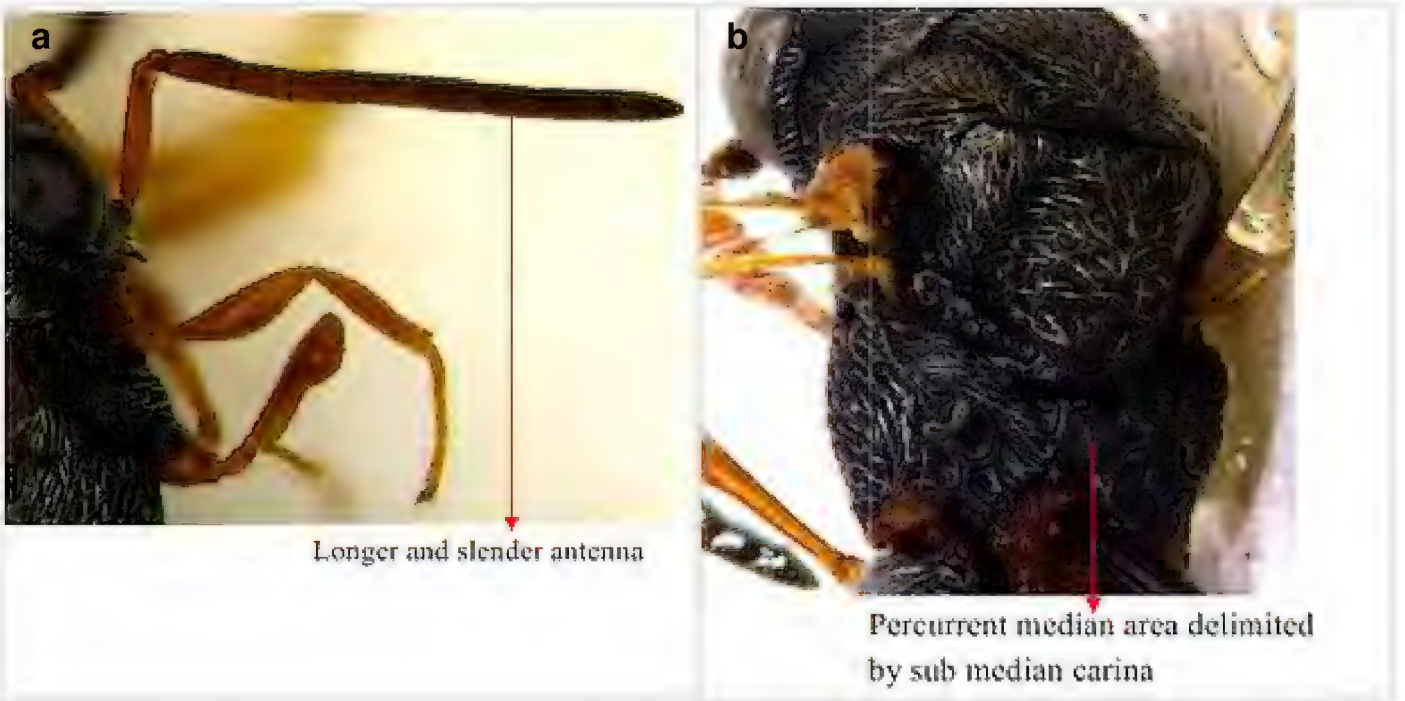

Figure 16.

Epitranus erythrogaster Cameron

a: Antenna
b: Mesosoma

Epitranus observator Walker 1862

Material

a. continent: Asia; country: India; countryCode: IND; stateProvince: Tamil Nadu; samplingProtocol: Yellow pan trap; eventDate: 11/12/2014; individualCount: 3; lifeStage:

adult; recordedBy: S. Palanivel and M. Ayyam Perumal; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

Distribution

E. observator is so far known from Andaman and Nicobar island, Delhi, Gujarat, Karnataka, Odisha, Rajastan, Sikkim, Tripura, Uttar Pradesh and West Bengal (Boucek 1982) and is a new record for Tamil Nadu (Fig. 17).

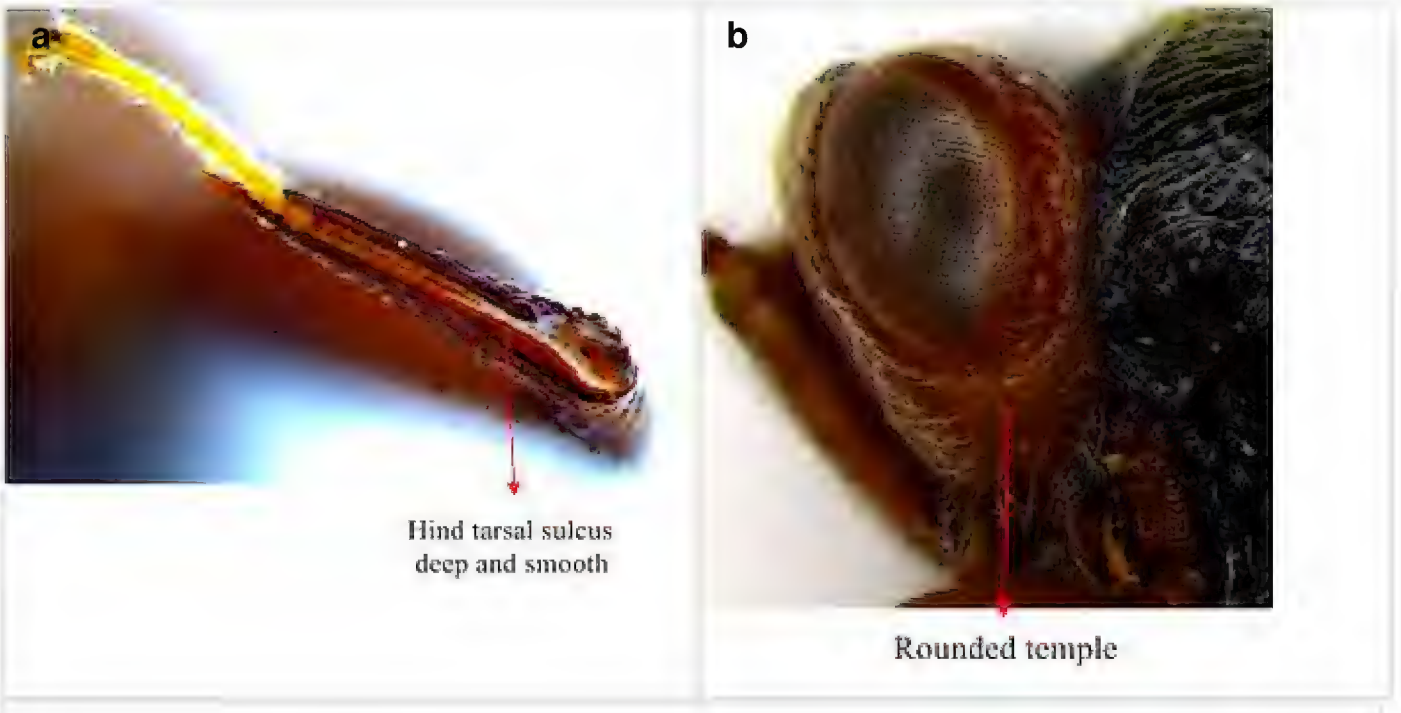

Figure 17.

Epitranus observator Walker

a: Hind tibia
b: Head lateral

Psilochalcis carinigena (Cameron) 1907

Materials

a. continent: Asia; country: India; countryCode: IND; stateProvince: Bihar; samplingProtocol: Yellow pan trap; eventDate: 01/22/2015; individualCount: 1; lifeStage: adult; recordedBy: Abhinav Kumar; identifiedBy: J. Gowri Prakash, S. Manickavasagam and R.Kanagarajan; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

b. continent: Asia; country: India; countryCode: IND; stateProvince: Andaman and Nicobar island; samplingProtocol: Yellow pan trap; eventDate: 05/20/2012; individualCount: 4; lifeStage: adult; recordedBy: S. Manickavasagam and A. Rameshkumar; identifiedBy: J. Gowri Prakash, S. Manickavasagam and R.Kanagarajan; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

Distribution

P. carinigena is so far known from Gujarat, Karnataka, Kerala, Madhya Pradesh, Tripura and West Bengal (Narendran 1989) and is a new record for Bihar and Andaman and Nicobar island (Fig. 18).

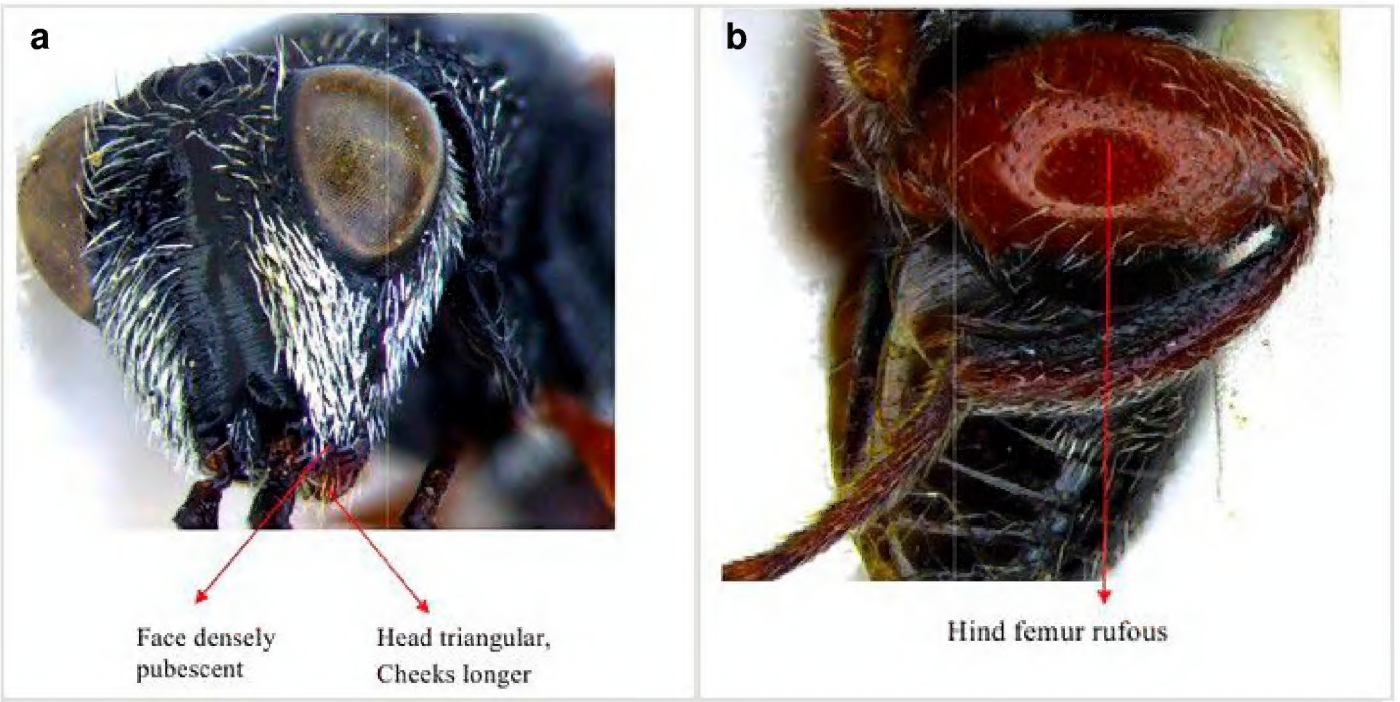

Figure 18.

Psilochalcis carinigena (Cameron)

a: Head frontal

b: Hind leg

Psilochalcis keralensis Narendran 1989

Materials

a. continent: Asia; country: India; countryCode: IND; stateProvince: Pudhucherry; samplingProtocol: Yellow pan trap; eventDate: 03/13/2011; individualCount: 8; lifeStage: adult; recordedBy: S. Manickavasagam; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

b. continent: Asia; country: India; countryCode: IND; stateProvince: Tamil Nadu; samplingProtocol: Yellow pan trap; eventDate: 07/29/2014; individualCount: 2; lifeStage: adult; recordedBy: S. Palanivel and N. Gowthaman; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

Distribution

This species is so far known only from Kerala and Tripura (Narendran 1989) and is a new record for Tamil Nadu and Pudhucherry (Fig. 19).

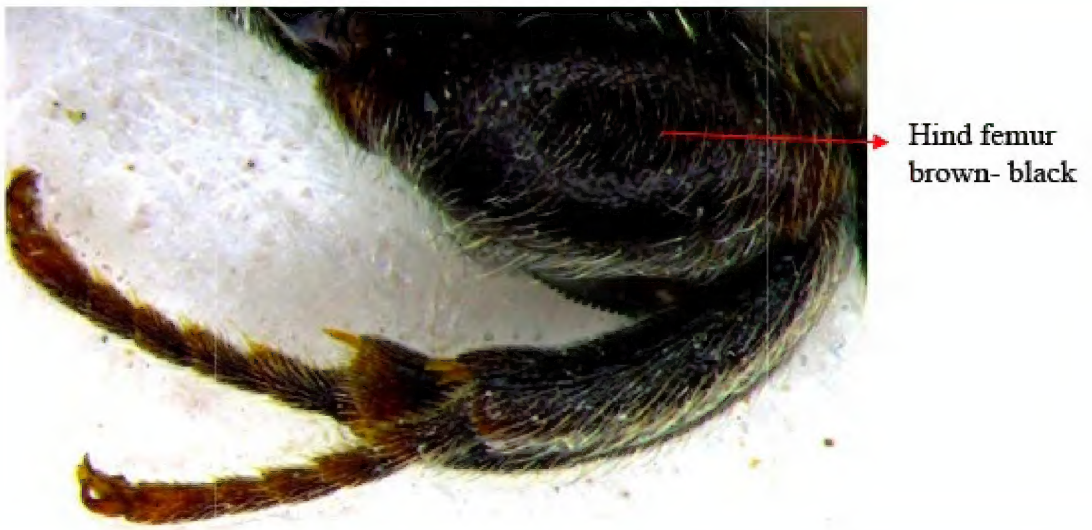

Figure 19.

Psilochalcis keralensis Narendran

Psilochalcis soudanensis (Steffan) 1951

Material

a. continent: Asia; country: India; countryCode: IND; stateProvince: Tamil Nadu; samplingProtocol: Yellow pan trap; eventDate: 05/02/2014; individualCount: 2; lifeStage: adult; recordedBy: S. Palanivel and M. Ayyam Perumal; identifiedBy: J. Gowri Prakash and S. Manickavasagam; institutionID: Department of Entomology, Annamalai University; institutionCode: EDAU

Distribution

This species is so far known from Andhra Pradesh, Delhi and Odisha (Narendran 1989) and is a new record for Tamil Nadu (Fig. 20).

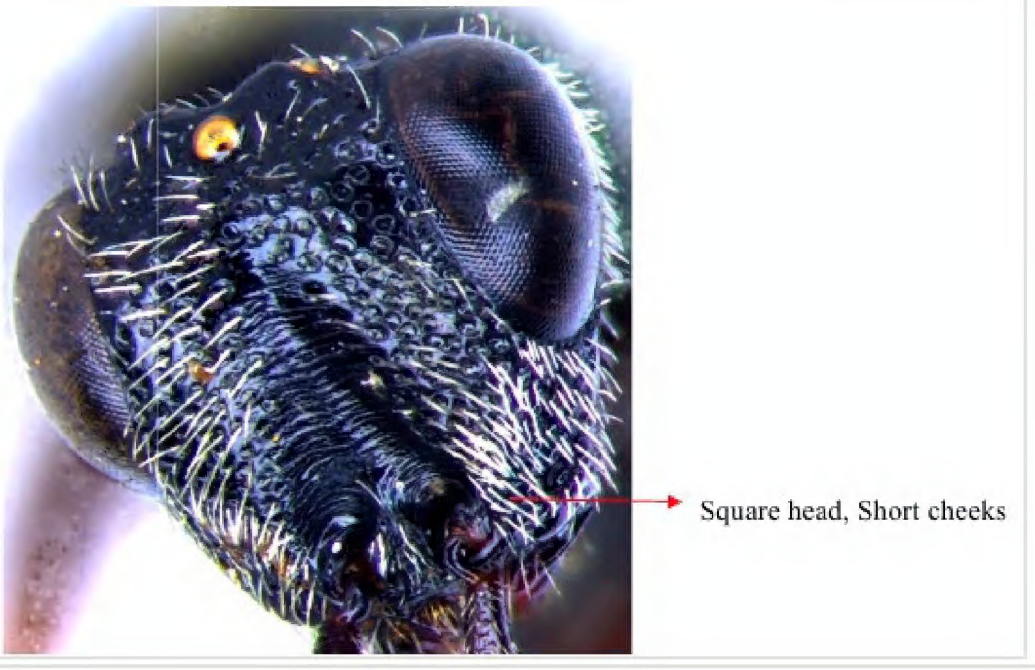

Figure 20.

Psilochalcis soudanensis (Steffan)

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Author contributions

J. Gowri Prakash – Collection, Identification, Image Capturing, Manuscript Preparation

S. Manickavasagam- Collection, Identification, Image Capturing, Manuscript Preparation

R. Kanagarajan - Collection, Identification

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